MICROCHIROPTERAN BAT MORTALITY IN A HARP TRAP DUE TO GREEN TREE ANT *OECOPHYLLA SMARAGDINA* ATTACK. *Memoirs of the Queensland Museum 38(2): 428. 1995.*- Microchirpoteran bat mortality in harp traps has been previously reported in Victoria (Schulz & Meggs, 1986; Lumsden, 1989; Wallis & Lumsden, 1993) and the Northern Territory (Underwood, 1994). In Victorian examples, bats were attacked and partially eaten by Bush Rats *Rattus fuscipes*, while in the case from the Northern Territory, mortality was due to Green Tree Ant *Oecophylla smaragdina* attack. This note reports another case of *O. smaragdina* attack on a harp trap which resulted in the mortality of 23 Little Bent-wing Bats, *Miniopterus australis*.

During a fauna survey of coastal wetlands in Trinity Inlet, Cairns, a harp trap was set on a walking track situated on the boundary of a dune ridge community (*Melaleuca leucadendra* overstorey to 18m, with mixed *Acacia crassicarpa*, *Alyxia spicata*, *Exocarpus latifolia*, *Terminalia muelleri*, *Cupaniopsis anacardioides*, *Pandanus sp* mid storey) and a *Ceriops tagal* dominated mangrove community. The trap was placed between two large *M. leucadendra* and, as the author was aware of the previous case of Green Tree ant attack, care was taken not to rest the trap against, or tie the side anchor-ropes onto the surrounding vegetation. The trap was set at dusk, and after a period of spotlighting and ultrasonic bat detection, the trap was checked for the last time at 2230 hours. No bats were present in the trap at the time of the last check, despite a large number of individuals being observed flying overhead and along the track. In addition, no Green Tree Ants were observed on the trap.

The trap was checked at approximately 0600 hours the next morning and 23 trapped *M. australis* were discovered dead in the trap. An extremely large number of *O. smaragdina* (approximate estimate 1000-2000 individuals) were present on the trap, particularly within the folds and spaces of the canvas capture bag and plastic dividing flaps. All bats were covered with large numbers of ants, many of which were also dead. In removing the canvas holding bag and then the bats, the author was attacked and bitten, and fumes excreted by the ants caused gagging and retching. Access to the trap by the Green Tree Ants was from the ground. The trap had been set in similar and slightly more dense vegetation on two previous occasions without attack.

The Green Tree Ant *Oecophylla smaragdina* (Formicidae) is a member of a group known as weaver ants due to their ability to construct arboreal community nests of woven leaves. This old world genus is widespread throughout tropical Asia, Africa and Australia, and forms large decentralised colonies of up to 500,000 individuals (workers, larvae workers, queens and queen larvae) representing many hundreds of nests in trees covering areas over 1000m^2 (Hölldobler & Wilson, 1990). Green Tree Ants are renowned for their highly evolved communication and co-operative social systems which include alarm responses, defence and food collection systems and recruitment and exploration strategies, all developed to control and maintain their large home range (Hölldobler, 1983). Short and long-distance recruitment is achieved by a combination of rectal gland odour trails, regurgitation of liquid crop contents, sternal gland secretions, mandibular alarm pheromones, body jerking displays and tactile stimulation. The composition and identity of these chemical signals are colony-specific (Hölldobler & Wilson, 1990).

From the knowledge of Green Tree Ant biology and microchiropteran bat feeding patterns, a scenario for the cause of the attack and subsequent death of the bats in the harp trap can be hypothesised. Recruitment strategies allow Green Tree Ant nestmates to explore and occupy a new space in a very short space of time. Worker ants exploring this territory periodically touch their abdomen tips to the new substrate leaving drops of brown fluid that act as colony-specific trail markers. Previous studies involving the placement of pot-plants into territorial areas indicated that workers actively enter and search newly opened terrain (Hölldobler & Wilson, 1990). It is suggested that the placement of the harp trap onto the track represented new territory that was rapidly explored and occupied during the course of the evening, before any bats were trapped.

Microchiropteran bats generally demonstrate bimodal feeding activity patterns, with post-dusk and pre-dawn activity peaks (Taylor et al.,1987). In the above case, the harp trap failed to capture any bats during the first period of feeding, despite a high level of observed activity. Therefore the bats subsequently trapped were possibly captured during the pre-dawn feeding period. Between the final trap checking and dawn, large numbers Green Tree Ants explored and occupied the harp trap, utilising the trap-legs as an access point. It is hypothesised that when the bats started striking and falling into the harp-trap holding bag, this disturbance caused rapid and aggressive defence responses in the ants. Green Tree Ants are highly responsive to substrate vibrations (C. Hill, pers. comm.). The bats were probably killed by a combination of ant-bites and secretions from the Green Tree Ants. Underwood (1994) incorrectly reported that the bats had been 'apparently killed by the repeated stings inflicted by the ants'. Green Tree Ants do not possess abdominal 'stings' but rather use their mandibles to bite and sprays of formic acid from their glands in defensive or attacking responses.

When harp trapping in tropical environments where Green Tree Ants are present, it is suggested that a number of precautions are taken to overcome the possibility of ants accessing and occupying the trap, including: minimising the contact of the trap on surrounding vegetation, not tying the stabilising guy-ropes to surrounding vegetation, using surface insect repellent on the trap legs or portions of the trap that are potential access points for the ants and placing the trap legs in small containers of water.

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